Applying participatory approach to study zoonoses in provinces of South Vietnam: experiences and lessons learned

Preliminary research results from the Vietnam project team of the Ecosystem Approaches to the Better Management of Zoonotic Emerging Infectious Diseases in the Southeast Asia Region (EcoZD) project

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Livestock production is main activity in agricultural production in Vietnam.

Livestock production and marketing are now encountering a range of problems, especially emergence of zoonotic diseases.

Overall objective is to study zoonosis and other emerging infectious diseases using an EcoHealth framework.
Provinces of Binh Phuoc and Tien Giang were selected because differences in social, ecological and agricultural characteristics.

A retrospective study was conducted to help identify two hotspot communes in each province.

In Tien Giang, two communes were selected: Tan Binh (Cai Lay District) and Trung Hoa (Cho Gao District).

In Binh Phuoc: Dong Tien (Dong Phu District) and Loc Hiep (Loc Ninh District).

Meeting between PRA team and local authorities and people in Lowland (Tien Giang)
PRA was used to enable local communities to assess social and economic conditions, ecological aspects related to risk factors of zoonoses.

PRA tools were applied to help communities to assess prevalence of zoonoses; and together with researchers, local officials and commune para-veterinarians to prioritize zoonotic infectious diseases.

These activities were also intended to help communities to propose solutions for prevention of zoonoses.
Methodology: Research sites

- Four selected communes were: Tan Binh (Cai Lay District) and Trung Hoa (Cho Gao District) in Tien Giang province; and Dong Tien (Dong Phu District) and Loc Hiep (Loc Ninh District) in Binh Phuoc province.

- Finally, a unique hamlet in each of these communes was randomly selected for PRA.

PRA team was drawing the Hamlet map
Methodology: PRA process

✓ A PRA team: staffs of three institutions (DAH, NLU and PI).

✓ A 5-day training course for staffs and local communities was conducted at class room level followed by field work at a representative study site.

PRA team carry out Transect walk in a Hamlet of Lowland
Methodology: PRA tools/techniques

✓ Tools: Commune history, Hamlet map, Transect walk, Seasonal calendar, Problem tree and Venn diagram.

✓ Study teams were separated into sub-teams for PRA tool.

✓ Techniques used to collect information were: Key Informant Interview and Focus Group Discussion.

✓ Information was generated from diverse interviews with local farmers, heads of villages, animal health workers, district veterinarians, health workers, and representatives of women’s and youth associations.
Methodology: Feedback and data analysis

✓ Collected information analyzed, discussed and fed back to local communities.

✓ Collected information was analyzed by a set of tools including tool basis and triangulation information.

Venn diagram tool in Highland Report and feedback
Findings and Analysis: Commune history

Lowland

- Better transportation.
- More opportunity to access technologies and market information.
- Animal diseases were common and appeared due to density of animal, inadequate veterinary service and poor slaughterhouse management.
- Larger scale led to problems in feed supply, waste management, disease and environmental pollution.
Findings and Analysis: Commune history

Highland

- Immigrants from different regions under the New Economic Zone (NEZ) policy.
- More industrial crops, but still small scale (aimed for self-sufficiency).
- Lack of technical knowledge and disease prevention, especially ECoZEIDs.
Findings and Analysis: Hamlet map

Lowland

- Many rivers and canals with high humidity in rainy season.

- Livestock density together with poor animal health care and interlacing river system; thus infectious diseases spread easily with high prevalence.

- Animal waste water was not treated and discharged into environment, leaching into groundwater, and thus facilitating the spread of pathogens and pollution.

Tan Binh hamlet. Painted geographical map of a hamlet located in the low land (Tien Giang)
Highland

- Erosion and flash floods often occurred due to topographic slope and it affected plantation crops and livestock production.
- Local residents settled in low areas where they suffered from disposal of waste materials.
- Smallholder animal production with lacking waste treating thus having a negative effect on environment.
- Transportation and electric power systems were under developed.

Hiep Quyet hamlet. Painted geographical map of a hamlet located in the high land (Loc Ninh, Binh Phuoc)
Findings and Analysis: Transect map

Lowland

- Mostly clay and fertile soils, consistent with short-term plantation crops with fruit trees, vegetable gardens, and wetland rice.
- Animals production was small scale.
- Some larger farms have installed waste management systems.

Painted transect map of hamlets located in the lowland area (Tien Giang)
Findings and Analysis: Transect map

Highland

- High part was planted rubber trees.
- Low part was planted orchards, vegetable gardens and upland rice.
- Animal production was mostly in small-scale or backyard.
- A few large farms were concentrated in the region.
- It was easy to develop extensive industrial crop farming.

Transect map of hamlets located in the highland zone (Binh Phuoc)
Findings and Analysis: Seasonal calendar

Lowland

- Main crop was rice production in three batches.
- Smallholder production of livestock.
- Poultry, particularly duck production, increased during summer rice crop.
- Agricultural activities depended on impact of market prices, disease events and regional features of localities.
- Prevalence of animal infectious diseases was related to impacts of transitional periods of weather.

The seasonal calendar of one rural hamlet in this study (Cai Lay, Tien Giang).
(--- revealed low level of events; bold lines revealed high level of events)
### Highland

#### Findings and Analysis: Seasonal calendar

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The seasonal calendar of one urban hamlet in the highland area (Dong Phu, Binh Phuoc)
Findings and Analysis: Seasonal calendar

**Highland**

- More diversified than in lowland.

- Crops: food crops (rice, maize, and cassava), vegetables, fruit trees, and industrial crops (rubber, pepper and cashew). Affection by weather features and capital investment.

- Thus, financial support for crop production was considered very important in locality.

- Animal production were small scale.

- Some symptoms of animal diseases appeared in a few months of years with prevalence during transitional periods (April – May and September – October).
Lowland

- Three main factors on EcoZEIDs: environmental impact, awareness level of residents, and livestock systems.

- First risk factor: poor management of slaughterhouse/slaughter points, water pollution due to lack of hygiene and no controlling waste water, and interlacing channels/rivers with risk of flood devastation.

- Second: lack of awareness by local residents to prevent of emerging infectious diseases.

- Third: animal production systems in household or backyard, limitation of veterinary services, and complications caused by high density of animals alongside roads and rivers.
Findings and Analysis: Problem tree

EcoZEIDs and predominant risk factors (urban lowland, Cho Gao, Tien Giang)
Findings and Analysis: Problem tree

Highland

- Scavenging, lack of awareness of prevention on vaccination programs, and neglect of health care and protection.
- Small-scale systems of animal production, poor veterinary services, high animal density, inadequate vaccination programs, lack of awareness by residents.

Problem tree of Blue ear disease in urban highland, Binh Phuoc
Findings and Analysis: Problem tree

- Different issues in these two localities: living condition, geographic features and status of animal husbandry.
- Environment issue was predominant in both areas (highland and lowland).
- Diverse environmental factors relate to animal and human health is indicated Diagrams.

Problem tree of Rabies in the rural highland (Binh Phuoc)
Findings and Analysis: Problem tree

Diagram 1. The influence and inter-relationships of problematic environmental issues on animal and human health (Lowland, Tien Giang)

Diagram 2. The influence and inter-relationships of problematic environmental issues on animal and human health (Highland, Binh Phuoc)
Findings and Analysis: Venn diagram

- Transmission from the host is very important that has been shown and analyzed.

- Function of government and unions in animal disease management (ECoZEIDs) is more effects.
Conclusions and Suggestions

- It is very important for local communities to participate in study of zoonoses in an integrative approach to the management of zoonotic diseases in an EcoHealth Framework.

- PRA results shown risk factors for ECoZEIDs: poor management of slaughterhouse/slaughter, waste-water pollution, animal density, transportation, vaccination, market control.

- PRA results are useful for providing broader understanding of socio-ecological context of disease incidence.

- Based on PRA results and in combination with results of retrospective study, cross-sectional surveys have been designed to further investigate the prevalence and risk factors of leptospirosis in selected areas in Southern provinces of Vietnam.
We thank local people of Tan Binh, Trung Hoa Communes (Tien Giang) and Dong Tien and Loc Hiep (Binh Phuoc), Sub-DAHs and Departments of Preventive Medicine in Tien Giang and Binh Phuoc for their active participation.

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Thank you very much for your attention!